1. A Bus covers four successive 9 km stretches at speeds of 9kmph, 18 kmph, 27 kmph and 36 kmph respectively. Its average speed over this distance is

(A) 10 kmph (B) 30 kmph (C) 17.28 kmph (D) 25 kmph

Sol. **(C)**

$$\text{Average speed} = \frac{9+9+9+9}{9/9+9/18+9/27+9/36} = 17.28$$

Ans.

2. Two trains of lengths 139 m and 61m are running in the same direction with velocities of 79 kmph and 89 kmph respectively. The time taken by them to cross each other, is

(A) 64 sec (B) 72 sec (C) 72 sec (D) 80 sec

Sol. **(B)**

Total length travel = (139 m + 61 m) = 200 m

Total velocities of train =89kmph – 79 kmph = 10 kmph

So, Time taken by train $= \frac{200\,\text{m}}{10\,\text{kmph}} = \frac{200\,\text{m}}{\frac{10\times1000}{60\times60}}$

$$= \frac{200\times60\times60}{1000\times10} = 72 \text{ sec.} \quad \textbf{Ans.}$$

3. A Train travels the first $\frac{1}{3}$ of a certain distance with a speed of 6 km/h, the next one third distance with a speed of 12km/h and last $\frac{1}{3}$ distance with a speed of 24 km/h. The average speed of the Train for the whole journey is:

(A) 72/7 km/h (B) 24/5 km/h (C) 30 km/h (D) 36 km/h

Sol. **(A)**

Let total distance travelled by car = *x*.

So, According to question

$$\text{Average speed of car} = \frac{x/3+x/3+x/3}{\frac{x/3}{6}+\frac{x/3}{12}+\frac{x/3}{24}} = 72/7 \text{ km/h}$$

4. Vikas riding a cycle at 18 km/hr can reach home in 16/3 hours. If he is delayed by 7/3 hours at the start, then in order to reach his home in time, he should ride with a speed of

(A) 15 km/hr (B) 16 km/hr (C) 32 km/hr (D) 20 km/hr

Sol. **(C)**

Speed of cycle = 18 km/h

Time taken to reach destination = 16/3 hours.

Distance travelled = $18.\frac{16}{3} = 96$ km

after delaying

$$v.\left(\frac{16}{3}-\frac{7}{3}\right) = 96$$

$\Rightarrow$ v=32 km/h **Ans.**

$$v.\left(\frac{16}{3}-\frac{7}{3}\right) = 96$$

5. If a 180 m long train crosses a platform of the same length as that of the train in 36 seconds, then the speed of the train is

(A)20km/hr (B) 60 km/hr (C) 36 km/hr (D) 80 km/hr

Sol. **(C)**

Total length of the train = (180 m + 180 m) = 360 m = 0.36km

Time taken by the train to cross platform = 36 sec. = 36/3600 hr

Speed of train = $\frac{0.36}{1/100} = 36$ km/hr

6. A Woman can row upstream at 19 kmph and downstream at 24 kmph. The rate of the current is

(A) 2.5 km/hr (B) 5 km/hr (C) 13.5 km/hr (D) 27 km/hr

Sol. **(A)**

woman row upstream = 19 kmph

woman row downstream = 24 kmph

So, Let speed of current V

According to question

$(19 + V)t = (24 - V) \times t$

$2V = (24 - 19)$ kmph

$V = \frac{5\text{kmph}}{2} = 2.5$ kmph

7. The speed of a boat in still water is 19 kmph and the rate of the current is 5 kmph. The distance travelled down-stream in 15 minutes is

(A) 6 km (B) 24 km (C) 12 km (D) 1ubt ryykutydrtyrdtTRDdrTHXthrsD#E2tjdhyt4dym8 km

Sol. **(A)**

Speed of water = 5 kmph

Speed of boat = 19 kmph

Speed in down stream = (19 + 5) kmph

Distance travelled in down stream = 24kmph (1/4hr)=6 km **Ans.**

8. A train takes 5 second to cross a man standing on a platform and 22 seconds to cross the platform. What is the length of the platform if the speed of the train is 36 km/hr.

(A) 140 m (B) 150 m (C) 170 m (D) None of these

Sol. **(C)**

Speed of train = 36 km/hr = 10m/s

Length of train = speed of train × (time to cross a man standing on platform)

= 10 m/s × 5 =50 m

Time taken to cross platform = 44 second.

So, Length of train + Length of platform = 22 × 10

⇒ 50 m + Length of platform = 220

Length of platform = (220 – 50) m = 170 **Ans.**

9. A train travelling at 36 km/hr takes 48 seconds to cross a bridge. It then crosses a man cycling at the rate of 9 km/hr in the same direction in 20 second. Find the length of the bridge.

(A) 150 m (B) 220 m (C) 280 m (D) 330 m

Sol. **(D)**

Speed of train = 36 km/h = $\frac{36\times1000}{60\times60}$ = 10 m/s

Speed of a man on cycle = 9 km/*h* = $\frac{3\times1000}{60\times60}$ = 2.5 m/s

Distance travelled to cross bridge = 10 m/s × 49 = 480 m

Length of train + Length of Bridge = 480 m . . .(1)

‡ Length of train = (10 – 2.5) m/s × 20 = 7.5 × 20 = 150 m . . .(2)

From equation (1) and (2)

Length of Bridge = (480 m – 150 m) = 330 m **Ans.**

10. A man started 17 minutes late and by travelling at a speed which is 6/5 th of his usual speed reached his office 18 minutes early. What is the usual time of journey?

(A) 185 minutes (B) 120 minutes (C) 145 minutes (D) 210 minutes

Sol. **(D)**

Let usual time of journey = t

Usual speed of journey = V

Distance traveled during journey = tV

According to question :

$$t \times V = \frac{6}{5}v.(t-17-18)$$

$$t = \frac{6}{5}t - 42$$

⇒ **t=210 Ans.**